

**FACT SHEET FOR NPDES PERMIT WA-000026-4**

**FACILITY NAME** Boise White Paper Vancouver Converting Facility

**(File: 2005 6-30-05 NPDES Fact Sheet3 Draft)**

**SUMMARY**

## TABLE OF CONTENTS

INTRODUCTION .....	1
DESCRIPTION OF THE FACILITY .....	2
History.....	2
Industrial process .....	3
Discharge Outfalls .....	3
OUTFALL 001: PROCESS WASTEWATER.....	3
PERMIT STATUS.....	4
SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT .....	4
WASTEWATER CHARACTERIZATION .....	4
SEPA COMPLIANCE.....	4
PROPOSED PERMIT LIMITATIONS.....	5
OUTFALL 001 .....	5
BASIS FOR TECHNOLOGY-BASED EFFLUENT LIMITATIONS.....	5
DERIVATION OF TECHNOLOGY BASED EFFLUENT LIMITS .....	6
BASIS FOR SURFACE WATER QUALITY-BASED EFFLUENT	
LIMITATIONS.....	7
Numerical Criteria for the Protection of Aquatic Life.....	7
Numerical Criteria for the Protection of Human Health.....	7
Narrative Criteria .....	7
Antidegradation.....	7
Critical Conditions .....	8
Mixing Zones .....	8
Description of the Receiving Water.....	8
Surface Water Quality Criteria .....	8
Consideration of Surface Water Quality-Based Limits for Numeric	
Criteria .....	9
CONSIDERATION OF SURFACE WATER QUALITY-BASED EFFLUENT	
LIMITS FOR NUMERIC CRITERIA.....	11
Numeric Criteria .....	12
Whole Effluent Toxicity .....	13
Human Health .....	13
Sediment Quality .....	14
Ground Water Quality.....	14
Shellfish protection .....	14
OTHER PERMIT CONDITIONS .....	14
MONITORING REQUIREMENTS .....	14
Lab Accreditation.....	14
SANITARY WASTEWATER TREATMENT PLANT OPERATOR	
CERTIFICATION .....	15
REPORTING AND RECORD KEEPING .....	15
SPILL PLAN .....	15
SOLID WASTE PLAN.....	15
EFFLUENT MIXING STUDY .....	15

OUTFALL AND SEWER LINE EVALUATIONS.....	15
TREATMENT SYSTEM OPERATING PLAN and REMOVAL EFFICIENCY REPORT .....	15
PRIORITY POLLUTANT SCAN.....	16
SLIMICIDE CERTIFICATION .....	16
GENERAL CONDITIONS .....	16
PERMIT ISSUANCE PROCEDURES .....	16
PERMIT MODIFICATIONS .....	16
RECOMMENDATION FOR PERMIT ISSUANCE .....	16
REFERENCES FOR TEXT AND APPENDICES.....	16
APPENDIX A--PUBLIC INVOLVEMENT INFORMATION.....	18
APPENDIX B--GLOSSARY .....	19
APPENDIX C--TECHNICAL CALCULATIONS .....	23
APPENDIX D--RESPONSE TO COMMENTS .....	25

## **INTRODUCTION**

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the State of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), whole effluent toxicity testing and limits (Chapter 173-205 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

<b>GENERAL INFORMATION</b>	
Applicant	Boise White Paper, LLC Vancouver Converting Facility
Facility Name and Address	Boise White Paper, LLC Vancouver Converting Facility 907 W. Seventh St., Vancouver, WA. 98660
Type of Facility:	Paper Converting Facility
SIC Code	Lithographic Printing Presses SIC # 2741 Off-Machine Coater & Capsule Plant SIC # 2762
Discharge Location	Waterbody name: Columbia River Outfalls 001 Latitude: 45° 37' 20" N Longitude: 122° 40' 50" W
	The sanitary sewer wastewater is discharged directly to City of Vancouver WWTP.
Water Body ID Number	River Mile 106 Waterway Segment No. 26-WRIS-99

### DESCRIPTION OF THE FACILITY

#### HISTORY

The paper facility at Vancouver dates back to the turn of the Century. Sulfite pulping was added about 1924. Chlorine and hypochlorite were used as bleaching chemicals until 1968 when the sulfite pulping and bleaching systems were closed down and dismantled. At this same time, the primary clarifier and the aerated stabilization pond were installed. Bleached pulp was barged in from Boise Cascade's St. Helens facility to feed Vancouver's paper machines. A small recycle plant with deinking capability that repulped bleached paper was added in the 1970's and small amounts of hypochlorite were used on the recycle pulp to raise brightness a few points. Paper production was shut down in 1996 and thereafter the facility continued as a converting facility. The applicable SIC as a paper facility is 2611. Paper produced elsewhere is brought onsite and enhanced in value through coating and printing operations. As a converting facility, the applicable SICs are 2741 for the printing presses, 2671 for the coating operation, and 2672 for the capsule plant. The resulting high value paper is used for such commodities as stock and security paper. The BOD and TSS effluent load generated from current facility activities is very low compared to past operations. As a converting facility, effluent consists largely of machine cleanup water which does not have the BOD load associated with digestion of wood chips.

In the Spring of 1996, the Vancouver facility closed its paper making processes and reduced the workforce from approximately 425 people to the present day level of approximately 60 to 65 people.

#### INDUSTRIAL PROCESS

The facility is currently a “converting facility” involved in converting uncoated papers to coated and security grade papers. No pulping, digesting, or bleaching activities occur at this site. Current facility activities consist of a capsule plant (maximum production of 9200 lbs/day), a coater (maximum production of 120 tons/day), and printing presses (maximum production of 23 tons/day). The capsule plant manufactures a coating which is both marketed as a product and used in the facility’s coating operation to make carbonless paper. The printing presses embed such features as “water marks” on paper where integrity is an issue such as financial documents. The facility discharges via a 36 inch diameter pipe at the above noted location. The facility discharge outfall extends from the facility site about 311 feet in a southwesterly direction into the Columbia River, at river mile 106.

#### DISCHARGE OUTFALLS

The treated process wastewater from the mill receives secondary treatment before being discharged via outfall 001 to Columbia River. The outfall extends about 311 feet from shore into the Columbia River. The process wastewater flow is intermittent. Prior to the complete removal of aerated sludge and the addition of the new liner system, (2000 to 2003), intermittent batch discharge averaged 3.0 MGD. In 2004 intermittent batch occurred to aid in the removal of lagoon aerated sludge. The major pollutants of concern are biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), and pH. The sanitary waste is discharged directly to the City of Vancouver WWTP. All storm water flow is routed to the secondary treatment system through the mill effluent treatment system.

The following table is based on effluent monitoring data reported in the monthly discharge monitoring reports and characterize the monitored parameters for the mill's discharges during 2003, & 2004:

#### OUTFALL 001: *PROCESS WASTEWATER*

Parameter	Monthly average	Range (min and max)
Flow (MGD)	3.0 MGD	0.057 – 6.29 MGD
pH	7.6	7.0-8.8 SU*
BOD <sub>5</sub>	235 lbs./day	20 - 780 lbs./day
TSS	494 lbs./day	15 - 2,000 lbs./day**
Temperature	8.8 ° C	6.1 – 16.6 ° C

- *During July 2003, as sludge was being dredged, there was a short duration when the pH exceeded 9.0 (a range of 9.6 to 12.1) resulting in dredging to be stopped and pH corrected to <8.5.*
- *The TSS reached 2000 lbs/day during one day of dredging in August 2003 ... the highest normal TSS discharge without this day would have been 1400 lbs/day during winter rains in Nov 2001.*

### *PERMIT STATUS*

The previous permit for this facility was issued on May 19, 2000. The previous permit placed effluent limitations on BOD<sub>5</sub>, TSS, whole effluent toxicity, and pH for Outfall 001.

An application for permit renewal was submitted to the Department on November 29, 2004.

### *SUMMARY OF COMPLIANCE WITH THE EXISTING PERMIT*

The last Class II compliance inspection was conducted on March 23, 2004. The permittee was found to be in compliance with their permit limits.

During the history of the previous permit, the Permittee has remained in overall compliance based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. The facility has experienced the events described below in the recent past:

- During heavy rainfall on 6/27/01, the facility had one storm water overflow to Columbia River for approximately 30 minutes. The event was attributed to mechanical failure of high level instrument pumping controls.
- The facility had one effluent discharge pH excursion during dredging of the lagoon on 8/25/03 for approximately 4 ½ hrs ... dredging was stopped and pH balanced to <9.0 before dredging process was restarted. There was no impact to the discharge flow to the Columbia River.
- The facility had one process effluent leak event from the effluent line (Mill to Lagoon) - Due to a mechanical failure of the air purge valve, a "light green liquid" flowed out of the manhole off of 8th street by the railroad bridge overpass and ran into the City of Vancouver storm water sewer system that empties to the Columbia River. There was no impact from the event to the Columbia River, however, the facility was fined \$1,000 due to "violation of RCW 90.48.080 - Discharge of polluting matter in waters prohibited."

### *WASTEWATER CHARACTERIZATION*

The Permittee's effluent analysis results are submitted with the renewal application. .

### *SEPA COMPLIANCE*

There are no SEPA requirements for this permit.

## **PROPOSED PERMIT LIMITATIONS**

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Whole Effluent Toxicity Testing and Limits (Chapter 173-205 WAC), Sediment Management Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and/or do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology.

The analyses of the need for limits and the derivation of limits where needed are described in the following sections for each outfall.

### **OUTFALL 001**

#### ***BASIS FOR TECHNOLOGY-BASED EFFLUENT LIMITATIONS***

Technology-based limitations are set by regulations or developed on a case by case basis. EPA periodically evaluates specific industries, such as pulp and paper, and publishes federal effluent guidelines which represent technology-based effluent limitations. In Washington, state law imposes a requirement to provide all known available and reasonable methods of treatment (AKART), and this requirement is functionally an overlay on the federal requirements. AKART may dictate more stringent technology-based limits than the federal effluent guidelines.

Ecology has reviewed the treatability data base, and information concerning the high demonstrated removal efficiencies for the Boise White Paper, LLC Vancouver, WA converting facility's process effluent treatment system. Ecology has concluded that any further treatment beyond the process effluent treatment system would only add a few percentage points to the removal efficiencies for BOD<sub>5</sub> and TSS. Based on this review, Ecology has determined that Boise White Paper, LLC Vancouver, WA converting facility's settling basin is determined to be equivalent to AKART for the conventional pollutants for this wastewater stream.



*DERIVATION OF TECHNOLOGY BASED EFFLUENT LIMITS*

The effluent limitations proposed for this permit are based on effluent characteristics observed from 1998 through 2004. Summaries of the facility's recent discharge history and effluent characterization are presented in Appendices A of this fact sheet. The facility currently batch discharges intermittently based on treatment lagoon volume.

There are not federal effluent guidelines for converting operations as there are for sulfite or kraft facilities. Facility effluent is not strongly correlated to production so typical production based emission factors were not deemed appropriate. The production rates for the Converting Operation over the last four years have been fairly constant, and have averaged 95 tons per day (tpd) which is equal to 190,000 pounds per day (ppd). The production has included Lithographic Printing Presses & Off-Machine Coater & Capsule Plant. Also, facility discharge is on an irregular batch basis making standard statistical methodology less meaningful. The effluent limitations currently in place, and proposed for this permit renewal, were developed using best professional judgement (BPJ) based on subjective evaluation of the historical effluent characteristics over the 1998-2004 period. The proposed BOD and TSS limits are based on the maximum effluent loading during the 1998-1999 period because this period best characterizes utilization of converting capacity. A buffer was added to account for the variability in the respective test method. The buffer used is based on twice the standard deviation (as %) associated with each test method as stated in "Standard Methods for the Examination of Water and Wastewater". For BOD, the buffer has been increased in recognition of the greater variability at low BOD concentrations. The effluent allowances work out as follows:

BOD: April 1998 BOD loading of 910 \* 1.20 buffer allowance = 1092 lbs/day

TSS: TSS loading of 1920 lbs/day \* 1.20 buffer allowance = 2304 lbs/day

The proposed monitoring requirements for the next permit cycle are summarized below. They reflect relatively recent (1998 through 2004) facility conditions as a converting plant discharging a low BOD effluent on an intermittent basis.

**PROPOSED EFFLUENT LIMITS**

<u>Parameter</u>	<u>Maximum Daily Limitation</u>	<u>Monitoring Frequency</u>	<u>Sample Type</u>
Biochemical Oxygen Demand (5-day), lbs/day	1092	at least once/ discharge	Grab or Composite
Total Suspended Solids, lbs/day	2304	at least once/ discharge	Grab or Composite
pH	5.0 to 9.0	Continuous	Recording
Temperature	-	Continuous	Recording

Flow (MGD)	-	Continuous	Recording
Total Production	-	Daily	Average Daily production

### *BASIS FOR SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL).

### NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in the receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

### NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

### NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

### ANTIDegradation

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. When the natural conditions of a receiving

water are of higher quality than the criteria assigned, the natural conditions shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

#### CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

#### MIXING ZONES

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones for toxicants can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows mixing zones to be used to meet human health criteria. Ecology has decided to use the chronic mixing zone for human health criteria.

#### DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Columbia River at mile 106. Characteristic uses include the following: industrial water supply; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

The Department has reviewed extensive monitoring records for the discharge to the Columbia River at the mill's outfall location and determined that the ambient temperature, dissolved oxygen, and pH meet the water quality standards for the designated class A fresh water quality criteria given in Chapter 173-201A WAC. Data for turbidity and toxicants are not available. The Department will use the designated class A fresh water quality criteria (as described below) for this water body in the proposed permit. The discharges authorized by this proposed permit are protective of the existing high quality water and should not cause a loss of beneficial uses.

#### SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Receiving water criteria at the location of this discharge is summarized below:

Fecal Coliforms	Fecal coliform organism levels shall both not exceed a geometric mean value of 50 colonies/100 mL and not have more than 10%
-----------------	--

	of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100mL.
Dissolved Oxygen	Dissolved oxygen shall exceed 8.0 mg/L.
Temperature	Shall not exceed 18 °C due to human activities. When natural condition exceed 18.0 °C, no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3 °C. Incremental increases resulting from point source activities shall not, at any time, exceed $t=28/(T+7)$ .
pH	pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.
Turbidity	Turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Toxics	No toxics in toxic amounts

#### SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

WAC 173-201A-100(2) requires a discharger to fully apply AKART prior to being authorized a mixing zone.

WAC 173-201A-100(3) requires mixing zone determinations to consider critical discharge conditions.

The current mixing zone extends downstream 339 feet and upstream 100 feet from the point of discharge. The mixing Zone lateral width extends no farther than 273 feet from point of discharge. The zone where acute water quality standards may be exceeded shall not be greater than 34 feet spatially in any direction from the point of discharge. The edge of this zone shall be referred to as the acute criteria compliance boundary.

The present mixing zone determinations were based on the full paper production operations prior to shut down of paper production in Spring of 1996. This was based on flows averaging 8.0 MGD with peaks reaching 10 to 11 MGD. Over the past four years there has been only 23 discharges to the Columbia River in comparison to the daily schedule prior to spring 1996. The treatment lagoon capacity is such that combined mill effluent, storm water, and landfill leachate only requires occasional intermittent discharge on a batch basis. The maximum daily discharge during the 2003-2004 timeframe was 6 mgd during January 2003. The present converting operation has virtually no impact in comparison to original outfall designs and is very conservative for all discharge conditions.

WAC 173-201A-100(4) states that no mixing zone shall be granted unless supporting information clearly indicates the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic

uses of the water body, result in damage to the ecosystem, or adversely affect public health as determined by the department.

Water quality standards are established based on EPA criteria. EPA's criteria were developed based on toxicity tests with numerous organisms, and are set based on protecting 95% of the species tested, unless important species are among the most sensitive 5%, in which case the standards are set to protect the most sensitive species. Water quality standards include relevant durations of exposure and are not based on instantaneous exposures. Acute standards generally are based on a 1-hour exposure at the criteria level and chronic standards generally are based on a 4-day exposure at the criteria level. The dilution modeling under critical conditions showed that the acute dilution was attained in less than 6 minutes and the chronic dilution in about 25 minutes. Drifting and non-strong swimming organisms in the water column would not be affected because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could, but they can also avoid. Benthic organisms are not affected because the plume is buoyant and rises in the water column, thus preventing exposures to benthic organisms. Sediment studies conducted for an earlier permit showed no problems with the sediments near the discharge. Whole effluent toxicity (WET) testing provides a means of evaluating the cumulative toxicity of an effluent. WET testing performed by Boise White Paper, LLC Vancouver Converting Facility passes the performance test requirements of WAC 173-205-050(2)(a) and requires WET testing once (1) per permit cycle.

When considering all of the above, the mixing zone does not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health.

WAC 173-201A-100(5) requires that water quality criteria shall not be violated outside of the boundary of a mixing zone.

WAC 173-201A-100(6) requires that the size of a mixing zone and the concentrations of pollutants present shall be minimized.

Ecology recognizes that the size constraints provided in WAC 173-201A-100(7) and (8) are among the most limiting in the country. Ecology recognizes that at any given time, the effluent plume actually utilizes only a portion of the acute and chronic mixing zone, which effectively minimizes the volume of water actually involved in mixing. Because tidal currents change direction, the entire volume of the zone is needed to accommodate changes in plume orientation. Ecology also recognizes that the plume rises through the water column as it mixes and that consequently most of the water volume in the mixing zone below the depth at which the mixed effluent traps, is not involved. It is impractical to attempt to specify in the permit the actual, much more limited volume in which the dilution occurs as the plume rises, traps and moves with the current. However, the conservative modeling of dilution factors implicitly reduce the mixing zone volume from the volume described in the permit to just the volume actually utilized by the plume. There are no concerns with the mixing zone encroaching onto sensitive habitat or

overlapping with other mixing zones. For these reasons, the size of the mixing zone and the concentrations of the pollutants present are appropriately and effectively minimized.

WAC 173-201A-100(7)(b) and (8)(b) provide mixing zone sizing constraints specific to estuarine waters.

The boundaries of the mixing zones were sized in accordance with the regulatory requirements.

WAC 173-201A-100(8) requires that a zone where acute criteria may be exceeded is allowed only if it can be demonstrated to the department's satisfaction the concentration of, and duration and frequency of exposure to the discharge, will not create a barrier to the migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.

The acute mixing zone is not located where it could create a barrier to the migration or translocation of indigenous organisms. Dilution modeling studies have demonstrated that the acute mixing occurs very rapidly as the less dense effluent rises through the water column due to both diffuser design and the effluent's buoyancy. The acute mixing occurs in a matter of a few minutes and the duration and frequency of exposure to elevated concentrations by any drifting, or non-strong swimming organisms is minimized because the organisms simply cannot stay in one place while the plume moves past them. Because the mixing zone poses no barrier to organisms, strong swimming species are able to avoid the plume. Exposure to elevated concentrations by benthic organisms is avoided because the plume rises in the water column.

Because the requirements of WAC 173-201A-100 have been satisfied, mixing zones are authorized in accordance with the following geometric configurations and dilution factors.

The acute mixing zone boundary shall not exceed in the downstream direction for a distance greater than 339 feet nor extend upstream for a distance greater than 100 feet from point of discharge. The zone where acute water quality standards may be exceeded shall not be greater than 34 feet spatially in any direction from the discharge point. The edge of this zone shall be referred to as the acute criteria compliance boundary. The chronic dilution zone boundary extends 245 feet from any diffuser port.

#### *CONSIDERATION OF SURFACE WATER QUALITY-BASED EFFLUENT LIMITS FOR NUMERIC CRITERIA*

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD<sub>5</sub> is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of surface water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.



## NUMERIC CRITERIA

BOD<sub>5</sub>--Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitation for BOD<sub>5</sub> was placed in the permit.

Temperature--The impact of the discharge on the temperature of the receiving water is minimal. The highest effluent temperature reported for the period from 2000-2004 was 84° F (29 °C). The reader is reminded again that the actual maximum effluent flow reported during the 2000-2004 timeframe was 6.29 MGD. The analysis is thus extremely conservative and predicts no violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit. However, continuous monitoring, recording, and reporting of the temperature are placed in the permit. This is a new condition from the previous permit.

pH-- The process effluent consists largely of press cleanup water and does not vary much from a neutral pH. The elevated pH indicated by the effluent history in July through September of 2003 reflects one time activities associated with the lagoon dredging effort. Compliance with the technology-based limits of 5.0 to 9.0 will assure compliance with the Water Quality Standards for Surface Waters.

Turbidity--Due to the large degree of dilution, it is believed that the turbidity criteria would not be violated outside the designated mixing zone.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

A determination of the discharge's potential to cause an exceedance of the water quality standards was conducted as required by 40 CFR 122.44(d). Appendix C of this fact sheet summarizes the comparison of the reasonable potential analysis done on metals detected both in final effluent and in follow-up analysis in the washdown water discharge. The Permittee will be required to conduct additional analysis to confirm the belief that the copper and zinc concentrations presented in Appendix C reflect the lagoon dredging and clean out operation that occurred over the 2003-2004 timeframe. It is believed metals resuspended from the solids resulted in the elevated metal levels in the sampled effluent. Additional sampling of incoming untreated effluent done in April 2005 still indicated the presence of copper and zinc. It is believed the additional future sampling results will indicate the virtual absence of metals in the final treated effluent. Note that the reasonable potential analyses are intended to predict maximum expected effluent concentrations, and the resultant concentrations at the edges of the respective mixing zones. The analyses result in a comparison with applicable water quality criteria and are based on a conservative, protective approach using standard EPA procedures. A “positive” result does not mean an actual water quality exceedance but does raise a concern.

## WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

The purpose of the acute tests is to determine the presence and amount of lethal toxicity. Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

The purpose of the chronic tests is to define toxic effects based on long-term exposures to wastewater effluent and to determine dosages associated with toxic and biological responses. Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC<sub>50</sub>, EC<sub>50</sub>, IC<sub>25</sub>, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity section(s) of their permits to their laboratory of choice.

In accordance with Section S1.D. of NPDES Permit No. WA 000026-4, Boise White Paper, LLC Vancouver Converting Facility submitted the acute and chronic effluent characterization reports for toxicity, in conjunction with the permit renewal application. As specified in the permit, the final effluent was tested once in the last summer and partially in the last winter. The WET testing of the winter sample was done by Northwest Aquatics. This test experienced a control failure invalidating test results. In previous testing, the effluent met the acute and chronic performance based standards of chapter 173-205 WAC. In response to the incomplete winter WET characterization, Boise White Paper, LLC Vancouver Converting Facility will be required to test for both acute and chronic toxicity once during the summer or fall no later than 2006 and in the last summer and once in the last winter prior to submission of the application for the next permit renewal.

## HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The Department has determined that the applicant's discharge does contain several chemicals of



concern (antimony, nickel, zinc and total phenols ) based on priority pollutant data provided with the permit application. Although detected, these were all at levels that were orders of magnitude lower than the applicable human health-based criteria and consequently have no reasonable potential to cause exceedances of human health-based standards in the receiving water..

#### SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require the Permittee to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

#### GROUND WATER QUALITY

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect beneficial uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100). The aeration basin has recently been cleaned of all old sludge and has installed a new geotextile “Bentomat Liner Material” under a 60 mil. HDPE liner. The Permittee discharges the treated wastewater into this water body either by direct discharge at outfall 001 and has a protected liner at the treatment pond through the soil under the aeration basin to the water body, the outcome is the same. The Permittee has virtually no potential to discharge to ground. Even with the above conditions ground water monitoring requirements will continue to be placed in the permit during this permitting phase. This discharge has no discharge to ground and therefore no limitations are required based on potential effects to groundwater.

#### SHELLFISH PROTECTION

Not applicable for this location.

### OTHER PERMIT CONDITIONS

#### MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment processes are functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

#### LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility is accredited for

BOD, TSS, and pH. The company hires accredited laboratories to perform bioassays and fecal coliform tests.

#### *SANITARY WASTEWATER TREATMENT PLANT OPERATOR CERTIFICATION*

Not required in permit ... Sanitary Waste is sent to City of Vancouver WWTP for treatment.

#### *REPORTING AND RECORD KEEPING*

Condition S3. is based on the authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

#### *SPILL PLAN*

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080. The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department.

#### *SOLID WASTE PLAN*

The Department has determined that the Permittee does not have a potential to pollute the waters of the state with leachate of solid waste.

#### *EFFLUENT MIXING STUDY*

The Department has estimated the amount of mixing of the discharge within the authorized mixing zone to determine the potential for violations of the Water Quality Standards for Surface Waters (Chapter 173-201A WAC). The Permittee determined the mixing characteristics of the discharge in a previous permit. No further requirements for modeling will be required at this time.

#### *OUTFALL AND SEWER LINE EVALUATIONS*

Proposed permit condition S11. requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection in the 4th year of the permit. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to evaluate the extent of sediment accumulations in the vicinity of the outfall.

#### *TREATMENT SYSTEM OPERATING PLAN and REMOVAL EFFICIENCY REPORT*

In accordance with state and federal regulations, the Permittee is required to take all reasonable steps to properly operate and maintain the treatment system (40 CFR 122.41(e)) and WAC 173-220-150 (1)(g). A treatment system-operating plan was submitted as required by state regulation in the previous permit. It has been determined that the implementation of the procedures in the

Treatment System Operating Plan is a reasonable measure to ensure compliance with the terms and limitations in the permit. Special condition S4 will require the permittee to update their Treatment System Operating Plan 180 days after the permit issuance date and after any major modification that changes the influent to the treatment system.

#### *PRIORITY POLLUTANT SCAN*

Ecology is not requiring additional effluent testing for priority pollutants beyond the application renewal analysis. Ecology does not believe the mill's activities as a converting mill warrant the additional testing.

#### *SLIMICIDE CERTIFICATION*

The permittee has certified that they do not use pentachlorophenol or trichlorophenol in their slimicides.

#### *GENERAL CONDITIONS*

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by the Department.

### **PERMIT ISSUANCE PROCEDURES**

#### *PERMIT MODIFICATIONS*

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

#### *RECOMMENDATION FOR PERMIT ISSUANCE*

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this proposed permit be issued for five (5) years.

### **REFERENCES FOR TEXT AND APPENDICES**

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109, updated through July 2002.

Washington State Department of Ecology.

Laws and Regulations( <http://www.ecy.wa.gov/laws-rules/index.html> )

Permit and Wastewater Related Information

(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

## **APPENDIX A--PUBLIC INVOLVEMENT INFORMATION**

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

The Department will publish a Public Notice of Draft (PNOD) to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Robert Carruthers  
Department of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (350) 407-6954, or by writing to the address listed above.

This permit and fact sheet were written by Robert Carruthers.

**APPENDIX B--GLOSSARY**

**Acute Toxicity**--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

**AKART**-- An acronym for “all known, available, and reasonable methods of treatment”.

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation** --The average of the measured values obtained over a calendar month's time.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of a treatment facility.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Chronic Toxicity**--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

**Clean Water Act (CWA)**--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Continuous Monitoring** --Uninterrupted, unless otherwise noted in the permit.

**Critical Condition**--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

**Dilution Factor**--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

**Engineering Report**--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Major Facility**--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.



**Maximum Daily Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**Minor Facility**--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Mixing Zone**--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

**National Pollutant Discharge Elimination System (NPDES)**--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Quantitation Level (QL)**-- A calculated value five times the MDL (method detection level).

**Responsible Corporate Officer**-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.



**Upset**--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

**APPENDIX C--TECHNICAL CALCULATIONS**

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at <http://www.ecy.wa.gov>.

## Appendix C. Boise White Paper - Vancouver Discharge History for 2003-2004

	BOD avg	BOD max	TSS avg	TSS max	Flow avg	Flow max	Temp max	pH max
2002								
Dec	300	300	285	285	5.02	5.02	50	7
2003								
Jan	330	460	460	760	4.71	6.08	54	7.9
Feb	100	100	140	140	1.03	1.03	58	8
Mar	400	400	500	500	3.79	3.79	60	7.8
Apr	ND							
May	490	660	510	700	2.3	3.19	66	8.4
Jun	ND							
Jul	30	40	20	30	0.135	0.184	78	9.6
Aug	280	780	80	2000	2.19	5.1	84	12.1
Sept	170	310	40	110	0.1	0.2	79	8.8
Oct	80	80	15	15	0.057	0.057	77	7.1
Nov	ND							
Dec	ND							
Jan	ND							
Feb	ND							
Mar	ND							
Apr	ND							
May	120	190	230	680	0.067	1.03	79	8.3
Jun	20	40	90	170	0.047	0.09	67	7.4
Jul	ND							
Aug	ND							
Sept	ND							
Oct	ND							
Nov	ND							
Dec	ND	ND	ND	ND	ND	ND	ND	ND
sum	2320	3360	2370	5390	19.446	25.771	752	92.4
avg	210.9090	305.4545	215.4545	490	1.767818	2.342818	68.36363	8.4



**APPENDIX D--RESPONSE TO COMMENTS**

No comments were received during the public comment period.